

Welcome

Libby Town Meeting

*Libby Memorial Center
March 7, 2007
7:00 to 9:00 pm*

Libby Asbestos Site, EPA Region 8, Libby, MT

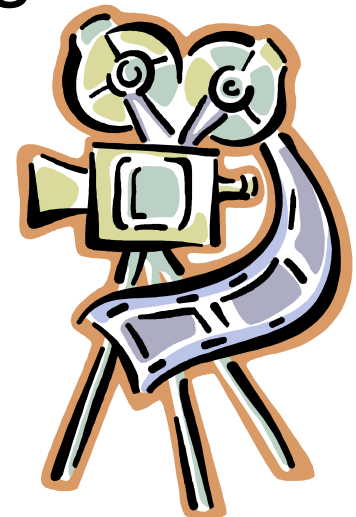


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Libby “*The Big Picture*”

- Part 1 - Organization and approach on addressing the OUs
- Part 2 - Defining “How Clean is Clean”



Four Lines of Attack on OUs

Part 1

Residential/ Commercial District (OU4)

Includes Highways 2 & 37

(Paul Peronard, EPA)

Mine (OU3)

Includes Rainey Creek Road, Rainey Creek, and Kootenai River

(Bonnie Lavelle, EPA)

Processing Areas (OUs 1, 2, 5, 6)

Includes the BNSF rail line

(Fran Costanzi, EPA)

Troy (OU7)

(Catherine LeCours, MDEQ)



Residential/Commercial

OU 4



Commercial areas



Residential screening

Residential/Commercial

OU 4

Goals

- Eliminate complete exposure pathways
 - Indoor (air & dust)
 - Yards
 - Attics
 - Others
- Arrange for O&M and ICs to provide for long-term management
 - Sub-surface
 - Walls
 - Carpets?
 - Previously unidentified sources of asbestos

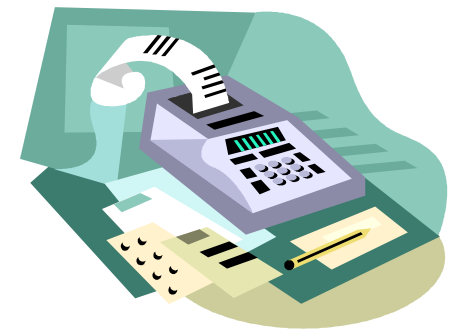


Residential/Commercial

OU 4

Funding

- FY07
 - Funding consistent with last three years (\$17 to \$20M/year)
- ERS position piloted
- Toxicity/Mine/Troy assessments will be funded separately



Residential/Commercial

OU 4

ERS Pilot

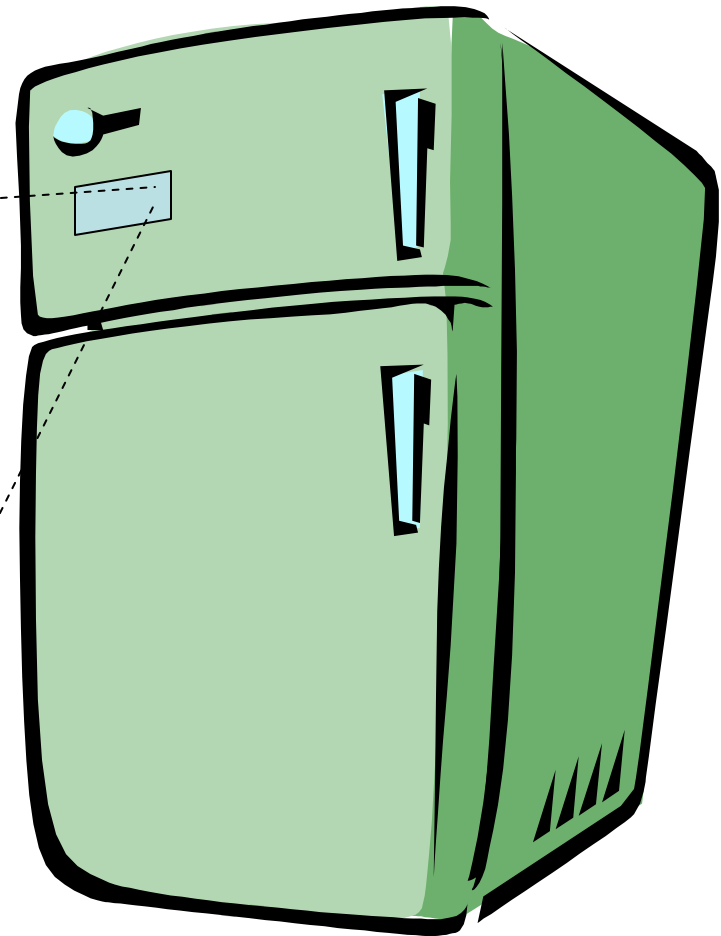
If you find vermiculite on your property, call the ERS for help in understanding and handling the situation.



**Libby Area Environmental
Resource Specialist (ERS)**

406-291-5335

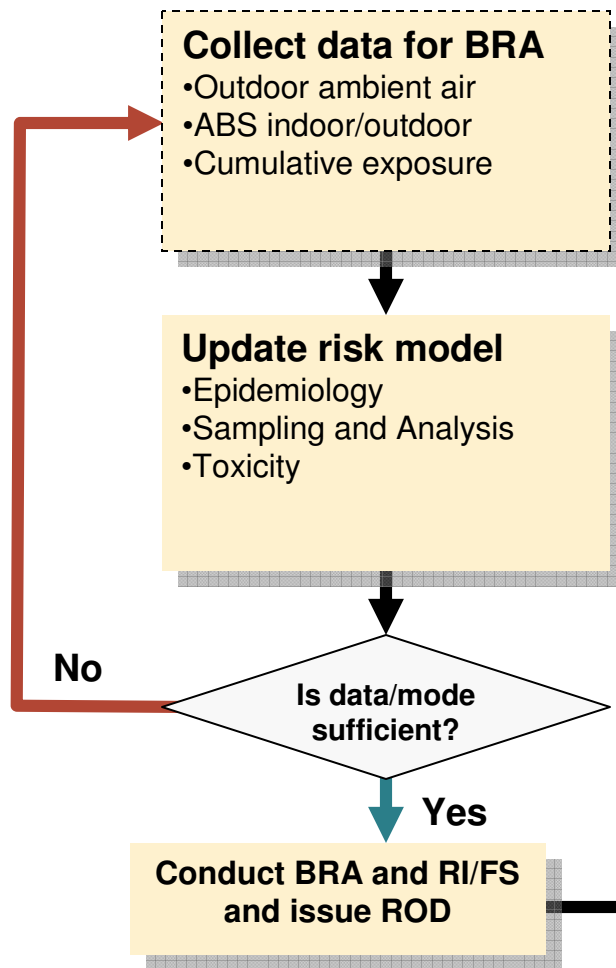
During regular business hours or emergencies



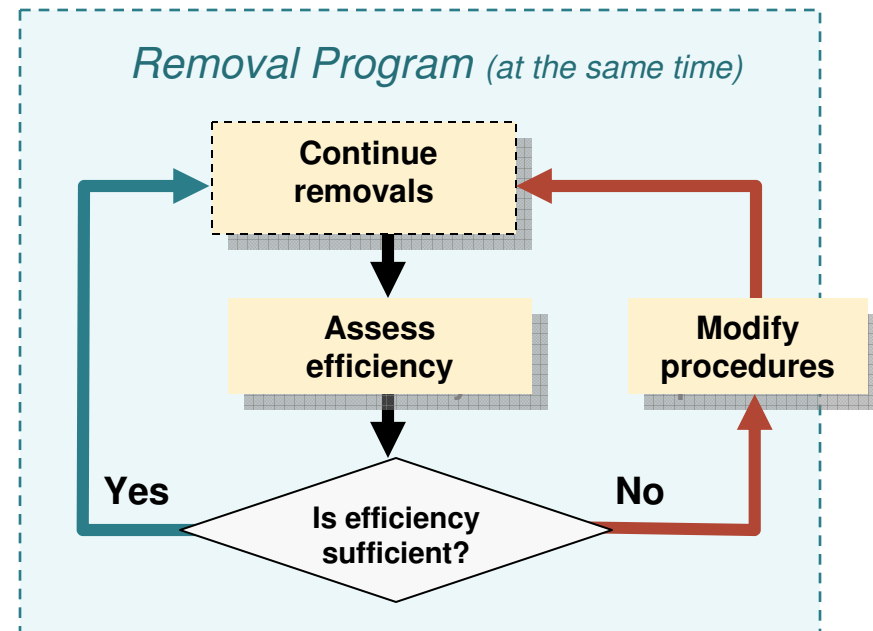
Residential/Commercial

OU 4

Remedial Program



Removal Program (at the same time)

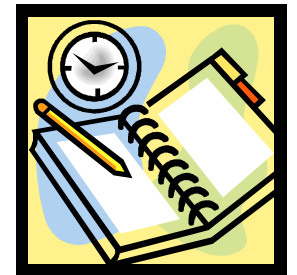


Residential/Commercial

OU 4

Proposed Timeline

- Continue current property clean ups (April 07)
- Complete clean up of properties currently identified as “needing clean up” (FY10)
- Complete “Big Three” exposure assessment (FY08)
- Complete exposure assessment (FY09)
- Finalize “new” risk model (FY10)
- Finalize Baseline Risk Assessment (FY10/11)



The Mine

OU 3



The Mine

OU 3

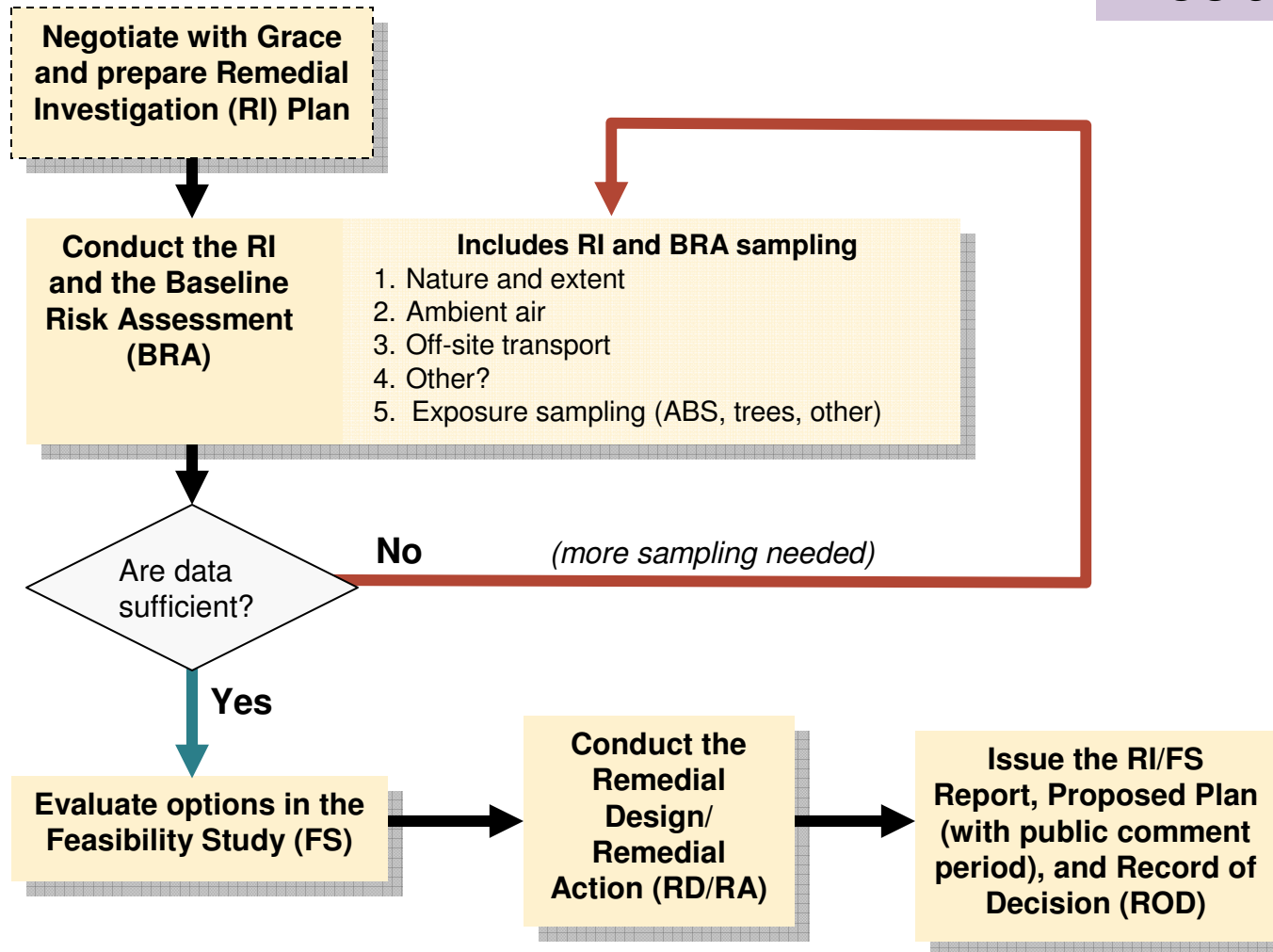
Goals

- Delineate contamination
- Define ambient releases/concentrations
- Assess migration and transport
 - Air
 - Water
 - Soil
 - Trees (bark)
 - Sediment
- Eliminate exposure pathways



The Mine

OU 3

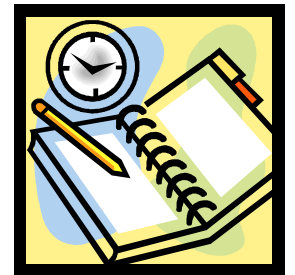


The Mine

OU 3

Proposed Timeline

- Screening-level evaluation (FY07)
- Complete Remedial Investigation (FY09/10?)
- Record of Decision (FY10/11?)



Processing Areas

OUs 1, 2, 5, 6



Export Plant (OU1)



Screening Plant (OU2)



Processing Areas

OUs 1, 2, 5, 6

- OU 1 – Export Plant
- OU 2 – Screening Plant, KDC Flyway/ Bluffs, and associated areas
- OU 5 – Stimson Lumber Mill
- OU 6 – BNSF Railway

Processing Areas

OUs 1, 2, 5, 6

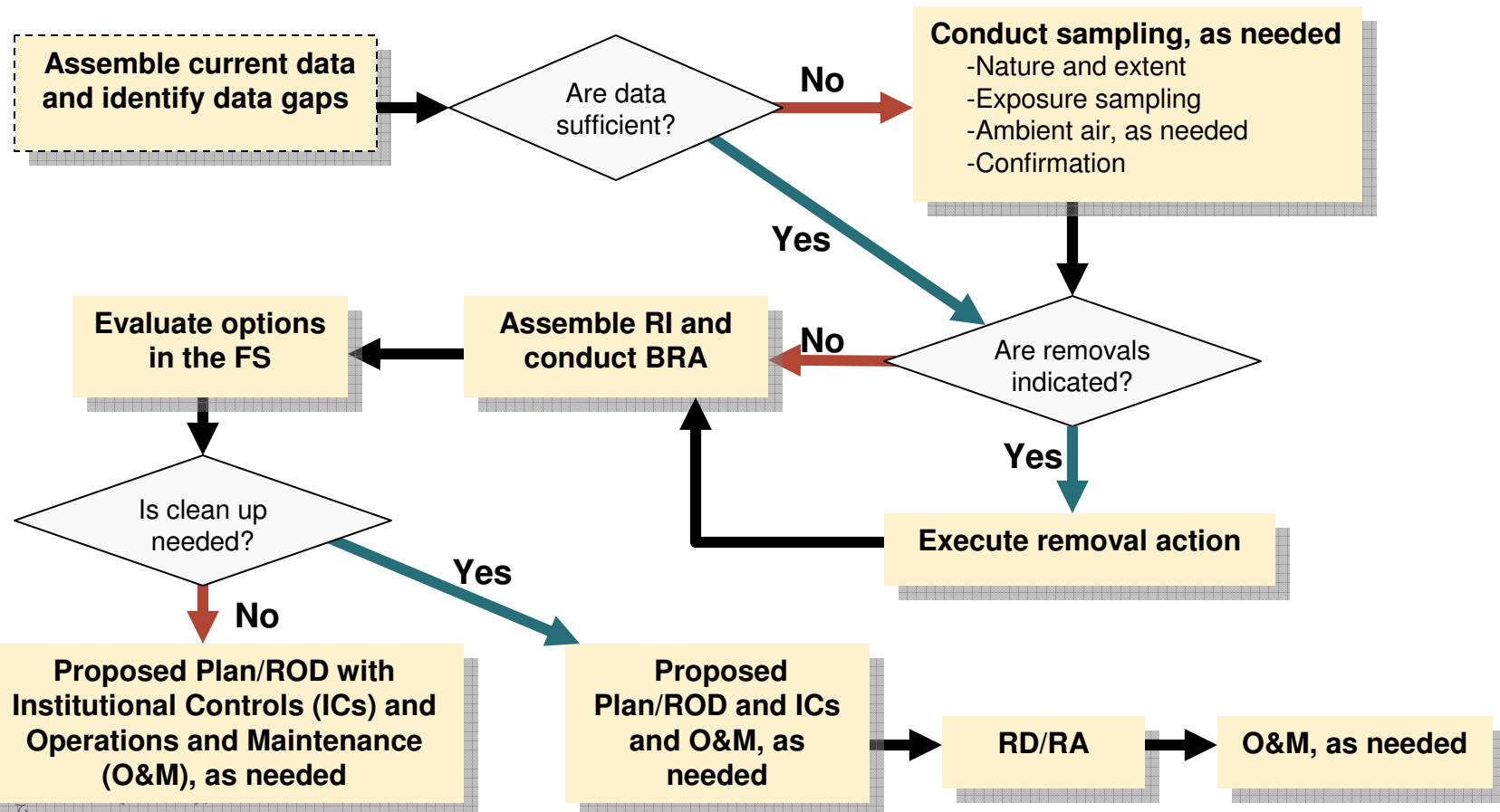
Goals

- Assess previous work
- Decide if additional work is needed
- Consider future land use
- Develop future property controls
- Finalize Record of Decision (ROD)



Processing Areas

OUs 1, 2, 5, 6

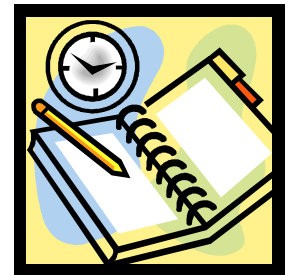


Processing Areas

OUs 1, 2, 5, 6

Proposed Milestones

- Complete data collection (2007-2008)
- Remedial Investigation/Feasibility Study documents (2007-2008)
- Proposed Plan/Record of Decision (2008-2009)



Troy

OU 7



- Use a fake horse

Hey, it worked before...

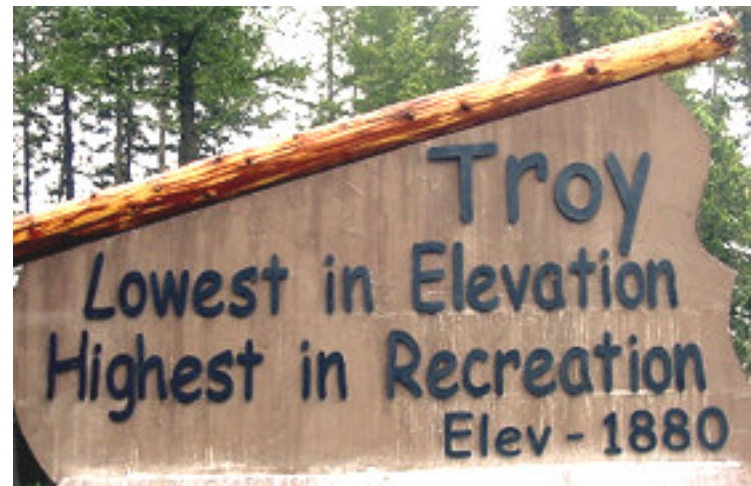


Troy

OU 7

Goals

- Similar to the Libby residential/commercial district (OU4)
- Remedial Investigation starts April 2007 (TAPE)
- Start removals?

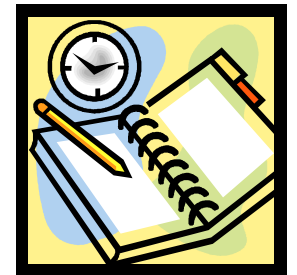


Troy

OU 7

Proposed Timeline:

- Complete assessment of 1,000 properties (FY07/08)
- Assess need for removal actions (FY08)
- Complete RI/FS (dependent on TAPE results)



OU Work in 2007



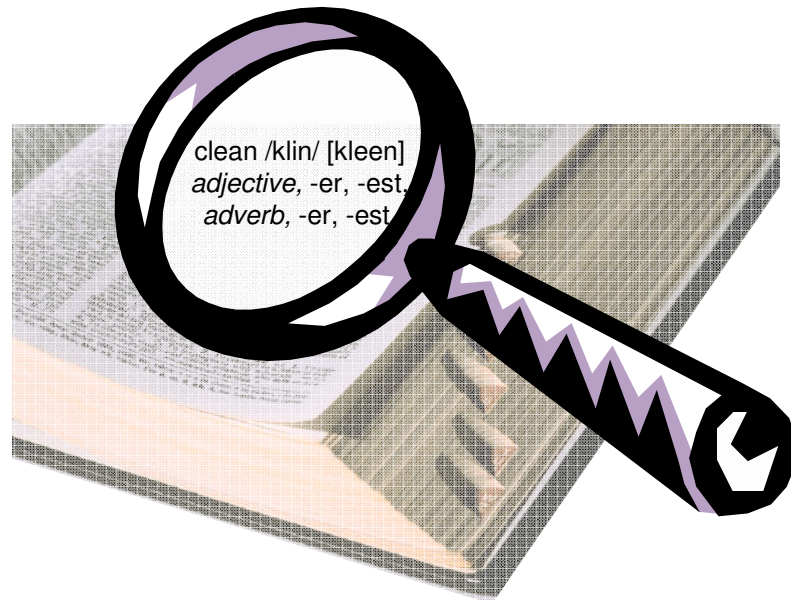
- Residential Commercial (OU4)
 - Continue current property clean ups
 - Start activity-based exposure sampling
- Mine (OU3)
 - Screening-level evaluation
- Processing Areas (OUs 1, 2, 5, & 6)
 - Continue data collection
- Troy (OU7)
 - Begin assessment of 1,000 properties



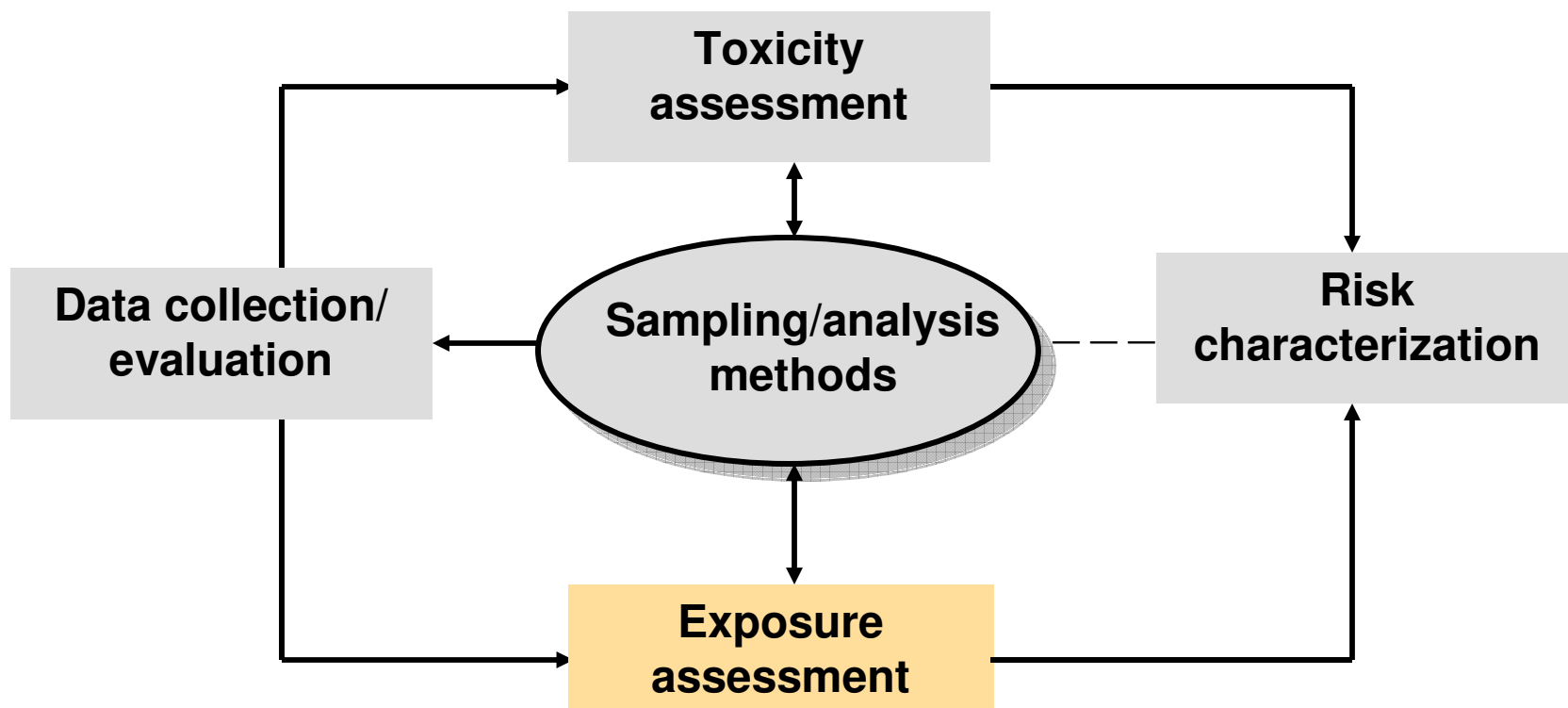
Defining “How Clean Is Clean”

Part 2

- Exposure data collection
- Epidemiology
- Analytical
- Toxicology



Sampling and Analytical Studies to Support Baseline Risk Assessment



Analytical

Critical Exposure Data Issues

1. Solid matrix sampling insufficient for cleanup decisions
2. Completed exposure pathways in the Conceptual Site Model (CSM) are not properly quantified
3. Current cleanup efficacy not yet evaluated
4. Nature and extent data are not complete for the mine and Troy (traditional RI)



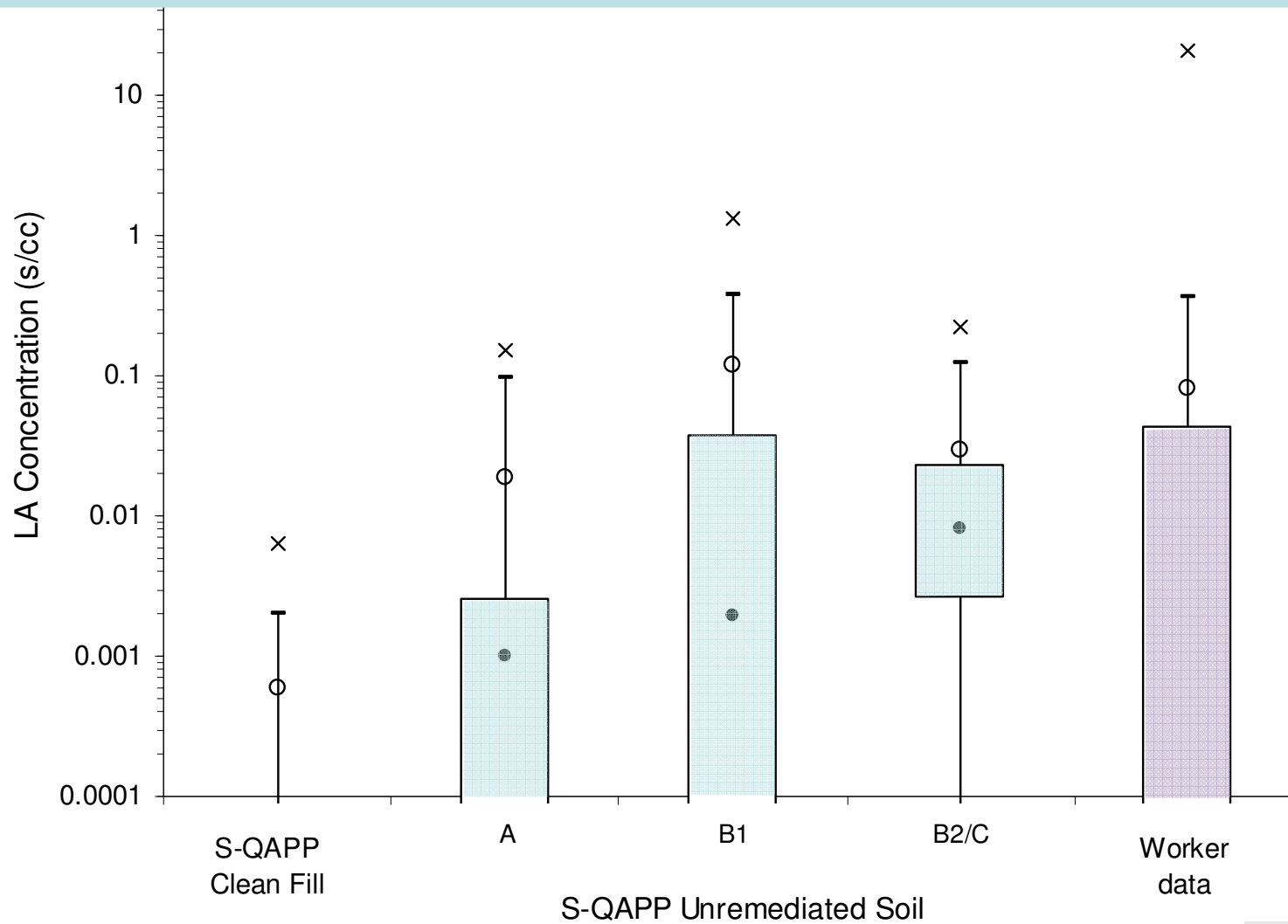
Solid Matrix Sampling

Challenges

- Soils that are non-detect by PLM still generate significant airborne fibers when disturbed
- Relationship between Libby Asbestos contamination of indoor dust to indoor air is poorly understood



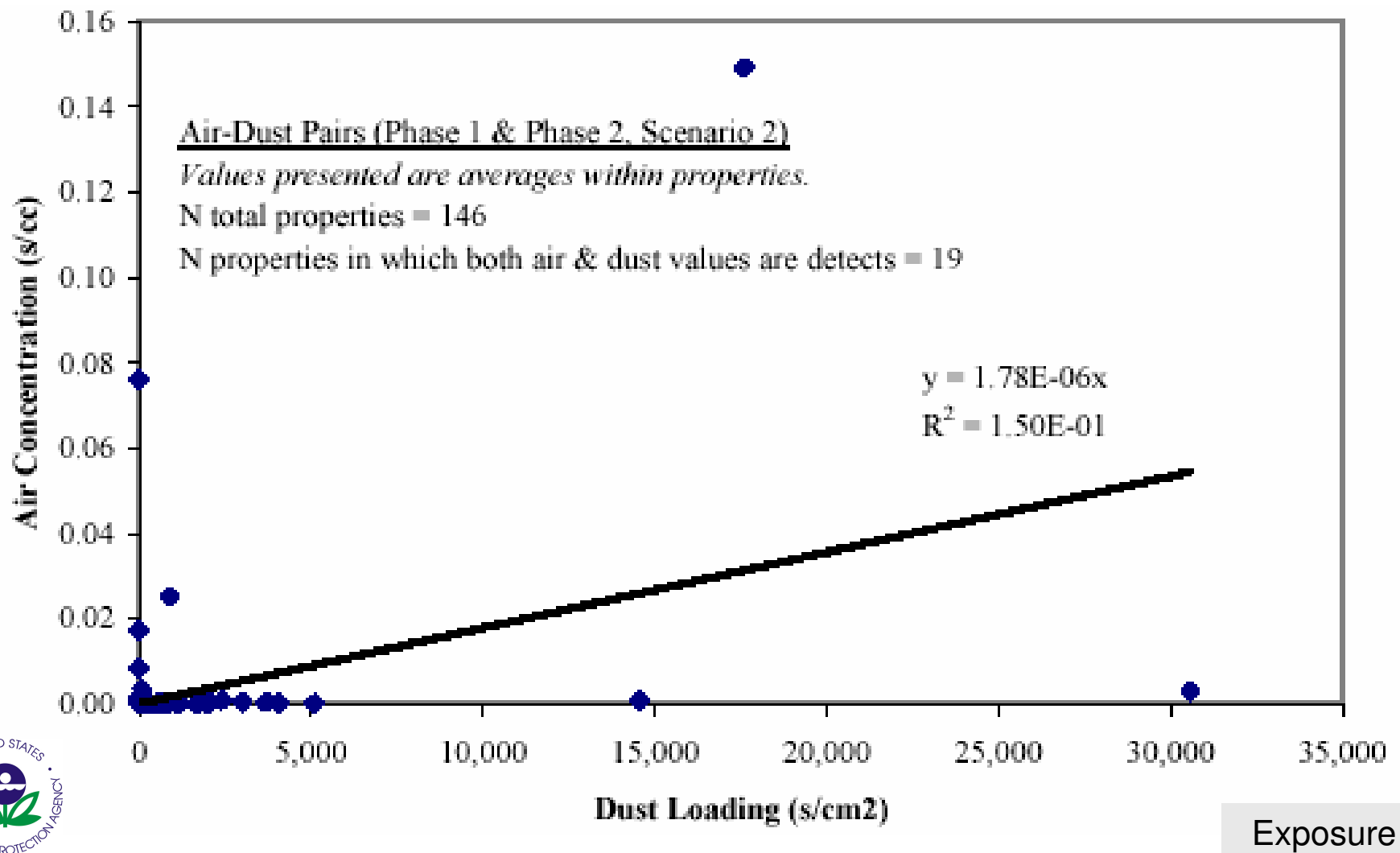
Preliminary ABS Results



Exposure



Indoor Dust to Indoor Air



Combined CSM/Efficacy Sampling

- The “Big Three” pathways
 - Outdoor ambient air
 - Indoor air (ABS)
 - Outdoor air around contaminated soils (ABS)
- Transportation corridors
- The rest



Nature and Extent

- Mine
 - Extent of soil contamination
 - Stream transport
 - Airborne transport
 - Surrounding trees
- Troy
 - How many properties impacted



Current Epidemiologic Investigations

- Libby Workers
 - NIOSH 2007: Updated mortality study
 - ATSDR X-ray study for disease progression
- Marysville Workers/Household Contacts
 - NIOSH study of exposure & non-cancer lung effects (RfC)
 - Univ of Cincinnati: X-rays, lung function, and mortality studies
- EPA coordinated evaluation of data
 - Develop site-specific RfC
 - Consideration of non-respiratory ailments
 - Identify potential biomarkers



Epidemiology = Study of Disease in Human Populations

Proposed Epidemiologic Studies

Libby, MT and Marysville, OH

- Compile & analyze data from all studies to assess
 - Exposure-response relationships
 - Disease process
- New and better medical testing of workers and others
 - Includes kids and susceptible populations
 - More sophisticated tests
 - Improves understanding of
 - Risk factors for disease
 - Exposure-response relationship
 - Disease process



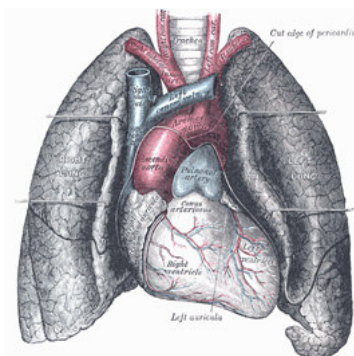
Note: Any studies involving human research will be subject to prior review and approval by a qualified Human Subjects Review Board



Epidemiology

Medical Surveillance & Tissue Studies

- Ongoing medical testing of select groups to
 - Improve understanding of health effects over time
 - Help determine if clean ups are working
 - Help identify biomarkers of exposure or disease
 - Provide a platform for treatment/disease prevention work
- Study of Libby Amphibole in human lung tissue to
 - Help understand how and where fibers are causing disease
 - Characterize fibers in human lung tissue
 - Improve models of lung burden from air exposure (dosimetry)

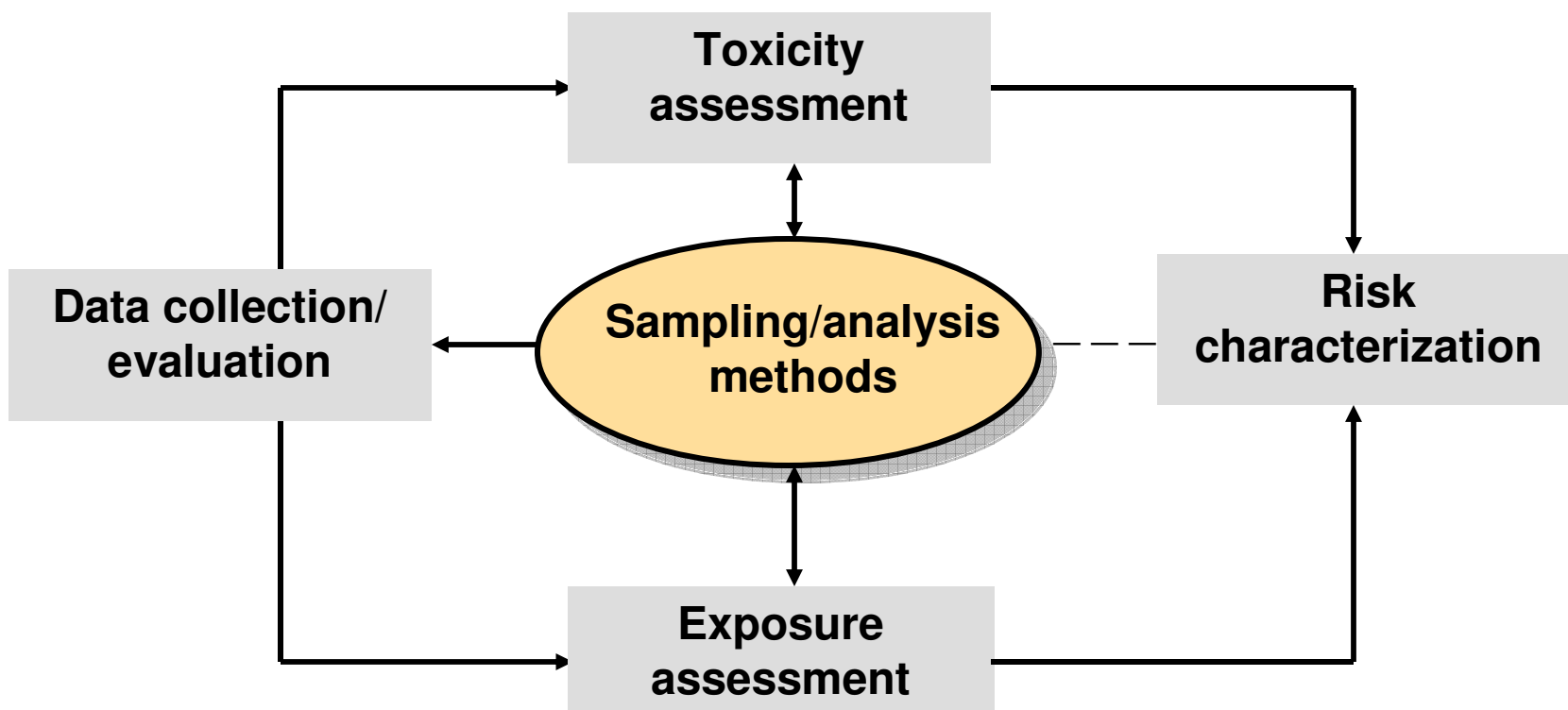


Epidemiology



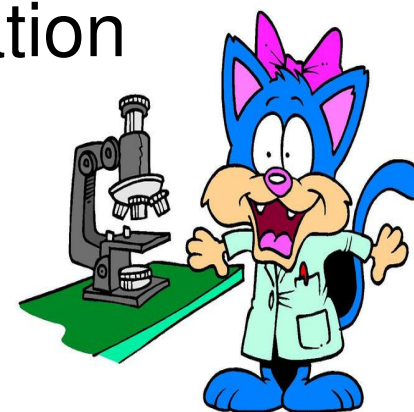
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Sampling and Analytical Studies to Support Baseline Risk Assessment



Sampling and Analysis

- Proposed research to improve knowledge of Libby Amphibole
 1. Filter studies
 2. Outdoor ambient air sampling verification
 3. Libby vermiculite fiber distribution
 4. Direct and indirect sample preparation comparison
 5. Low-level Libby Amphibole in soil method development



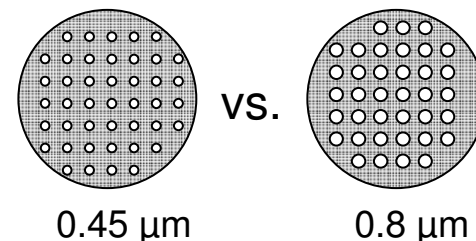
Analytical



1. Filter Studies

- Assess collection efficiency of Libby Amphibole related to filter pore size & filter composition

- 0.45 μm vs. 0.8 μm pore size
- Mixed Cellulose Ester vs. Polycarbonate filter material



- Questions we are asking

- *Is there a loss of short fibers using the larger (0.8 μm) pore size filters?*
- *Does one filter material collect Libby Amphibole sample more effectively?*

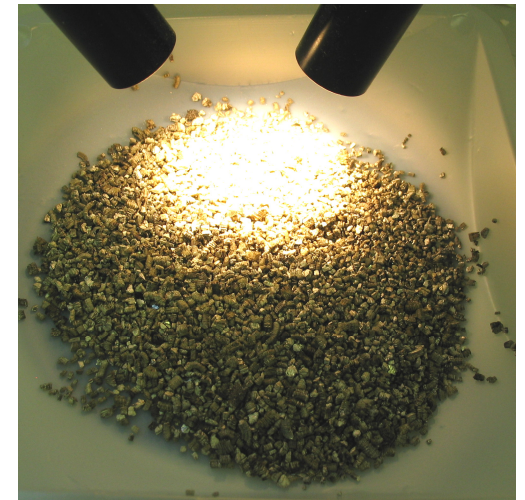
2. Outdoor Ambient Air Sampling

- Perform “bench-scale testing” to evaluate sample collection efficiency of Libby Amphibole
 - Low air flow of known concentration
 - Collected continuously over several days
- Question we are asking
 - *If Libby Amphibole is present in outdoor ambient air, do we detect it?*



3. Libby Vermiculite Fiber Distribution

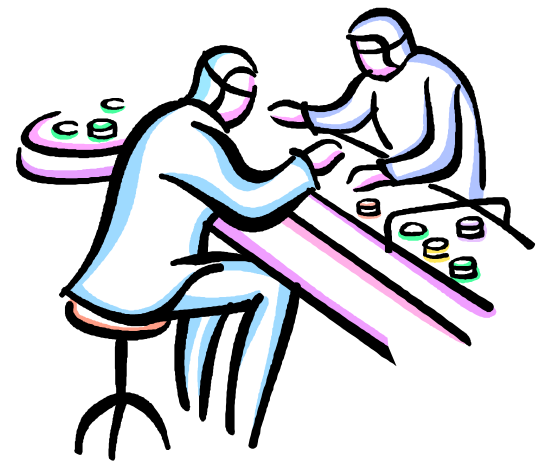
- Characterize fibers generated in air from Libby vermiculite material
- Question we are asking
 - *Are fibers generated similar to samples collected in Libby?*



Analytical

4. Direct and Indirect Sample Preparation

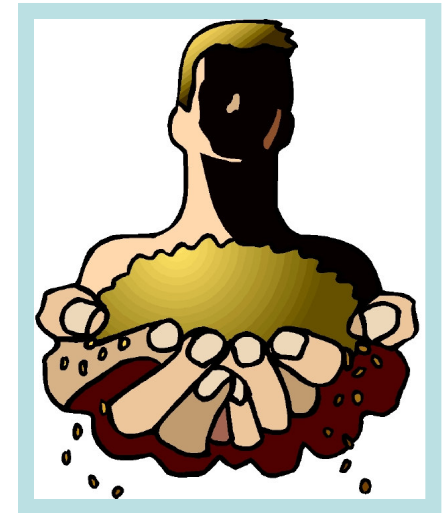
- Compare methods
 - Direct prep = analysis of primary filter
 - Indirect prep = transfer of material from primary to secondary filter for analysis
- Question we are asking
 - *Do the different methods yield similar results?*



Analytical

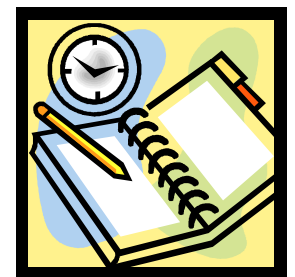
5. Soil Method Development

- Test soils
 - With low levels of Libby Amphibole
 - Using EPA Region 10's "Glove Box" method
- Question we are asking
 - *Can the Glove Box method measure presence or absence of Libby Amphibole in soils at levels below 0.2%?*



Analytical Timeline

- Research initiated in 2007
 - Filter studies
 - Outdoor ambient air sampling verification
- Research planned to initiate in 2008
 - Libby vermiculite fiber distribution
 - Direct & indirect sample preparation
 - Glove Box method validation



Analytical

Toxicity

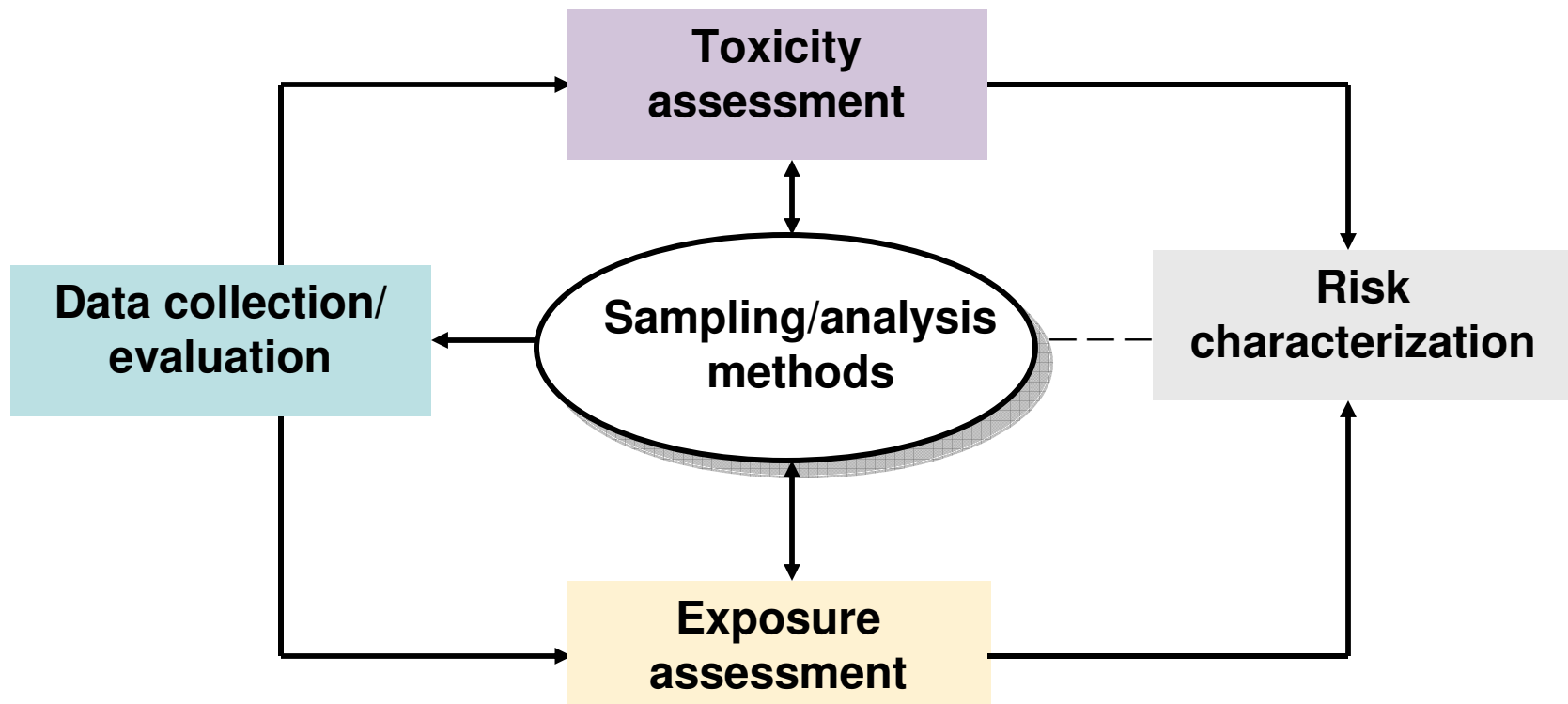


From *The Montanian*, March 3, 2007

Toxicity

Baseline Risk Assessment

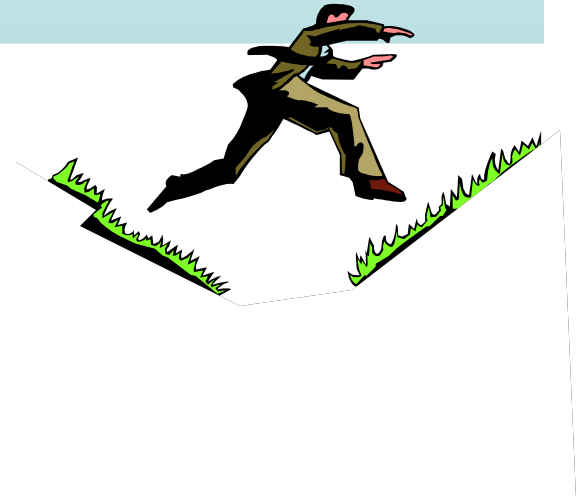
Human Health



Toxicity

Toxicity Data for Needed for BRA

1. Non-cancer health effects
2. Cancer risk
3. Mathematical models for estimating risk
4. Deposition of Libby Amphibole in lungs
5. Effects of Libby Amphibole in lungs and other tissues



Toxicity Studies

Funded studies

- Ongoing Libby Amphibole RfC Development
- Libby Amphibole cancer assessment
- Preparation of Libby testing material
- Dosimetry model development & simulation studies
- In vitro dissolution assays
- Comparative toxicology in mice and rats
- Inhalation toxicology in rats
- New epidemiological information from Libby cohort
- New epidemiological information from other cohorts
- Ongoing OSWER Interim Cancer Risk Methodology



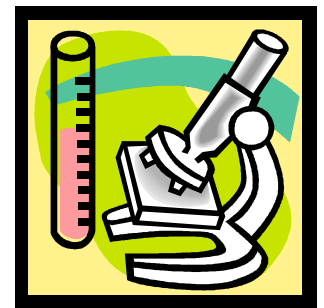
1. Non-Cancer Health Effects

- Reference Concentration (RfC)
 - *An estimate of the level in air at which continuous exposure to a substance over a lifetime is likely to be without appreciable risk of adverse health effects*
- No existing RfC for any type of asbestos
- Development of RfC for Libby Amphibole
 - Based on data from exposed workers in Marysville, Ohio



1. Non-Cancer Health Effects (cont.)

- Toxicity studies will focus on
 - Adverse effects in lungs and other tissues
 - How Libby Amphibole causes disease
- End results
 - Reduced uncertainty in development of RfC
 - More accurate risk assessment
 - More effective clean up



Toxicity



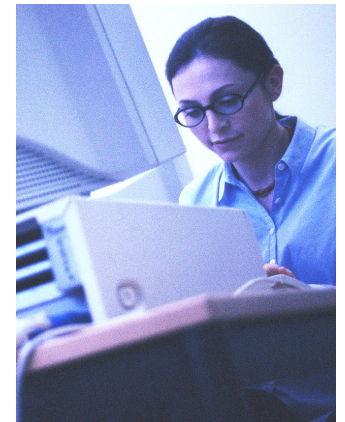
2. Cancer Risk

- Cancer Slope Factor (CSF)
 - Conservative estimate of increased cancer risk associated with lifetime exposure to a substance
- Current CSF for asbestos does **not** consider
 - Increased cancer potency of amphiboles
 - Short, thin fibers
 - Childhood exposures
 - Short duration, intermittent exposures
- CSF for Libby Amphibole will be developed



2. Cancer Risk (cont.)

- Toxicity studies will focus on
 - Relative potency of Libby Amphibole compared to other asbestos
 - Short, thin fibers
 - Early lifetime exposure
 - Intermittent, short-duration exposures
- End results
 - Reduced uncertainty in development of CSF
 - More accurate risk assessment
 - More effective clean up



Toxicity

3. Mathematical Models for Risk

- OSWER Interim Cancer Risk Model
 - Effort led by EPA Office of Solid Waste and Emergency Response (OSWER)
 - Current draft undergoing revisions
 - Peer review and validation planned



Population-based
data

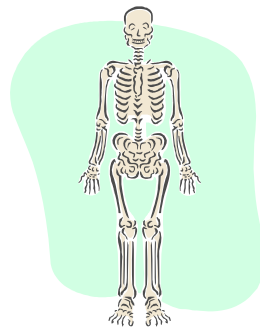
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Toxicity

3. Mathematical Risk Models (Cont.)

- Physiologically Based Pharmacokinetic (preferably referred to as PBPK) Model
 - Long-term priority
 - Potentially useful for five-year review



Biologically-
based data

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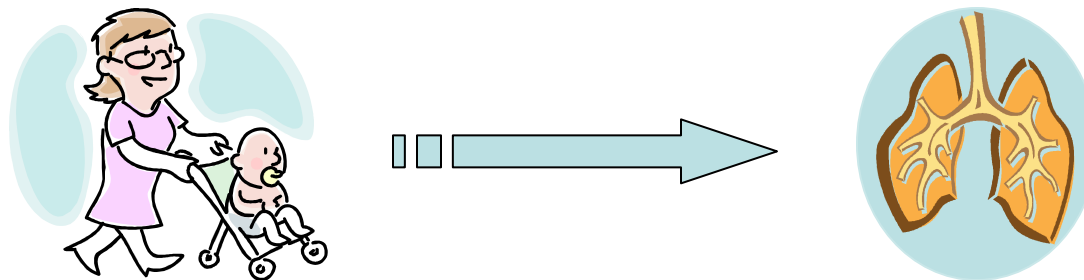
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Population-based
data

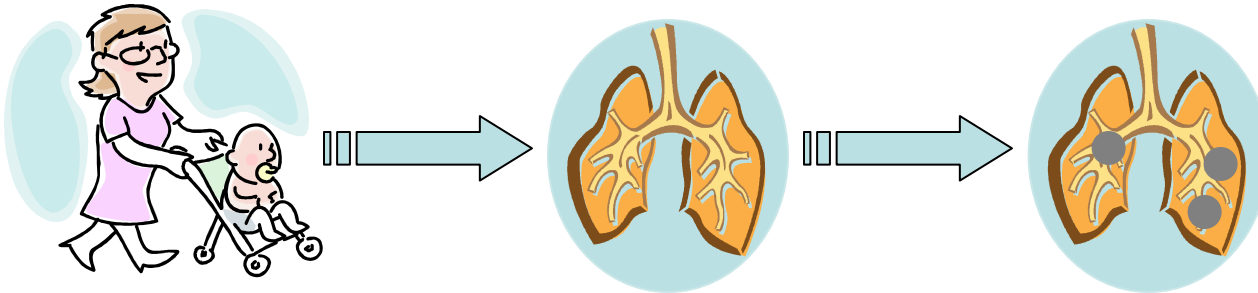
4. Libby Amphibole in Lungs

- Amount in air versus amount in lungs
- Dosimetry modeling of exposure
 - How much actually gets into lungs?
 - What happens to it over time?
 - More accurate measure of exposure than amount in air



4. Libby Amphibole in Lungs (cont.)

- Exposure – Response relationship
 - Relationship between amount in lungs & disease



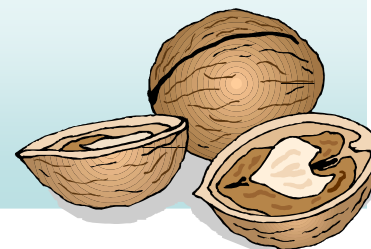
- End results
 - Improved scientific basis for evaluating exposure–response relationship
 - More accurate risk assessment
 - More effective clean up

5. Libby Amphibole in Lungs and Other Tissues

- Toxicity studies will improve understanding of adverse effects in lungs and other tissues
- Toxicity in other organs
 - Autoimmune disease
 - Chronic inflammation
 - Developmental/reproductive effects
- End results
 - Reduced uncertainty in development of RfC and CSFs
 - More accurate risk assessment
 - More effective clean up



In a nutshell....



EPA's overall strategy is to

- Address critical Issues on the 4 OUs (residential/commercial, processing areas, the mine, and Troy)
- Define “How Clean is Clean” using exposure, epidemiology, laboratory analysis, and toxicity



As always, we welcome your questions (here or at the Info Center) and encourage your participation in the Community Advisory Group

